

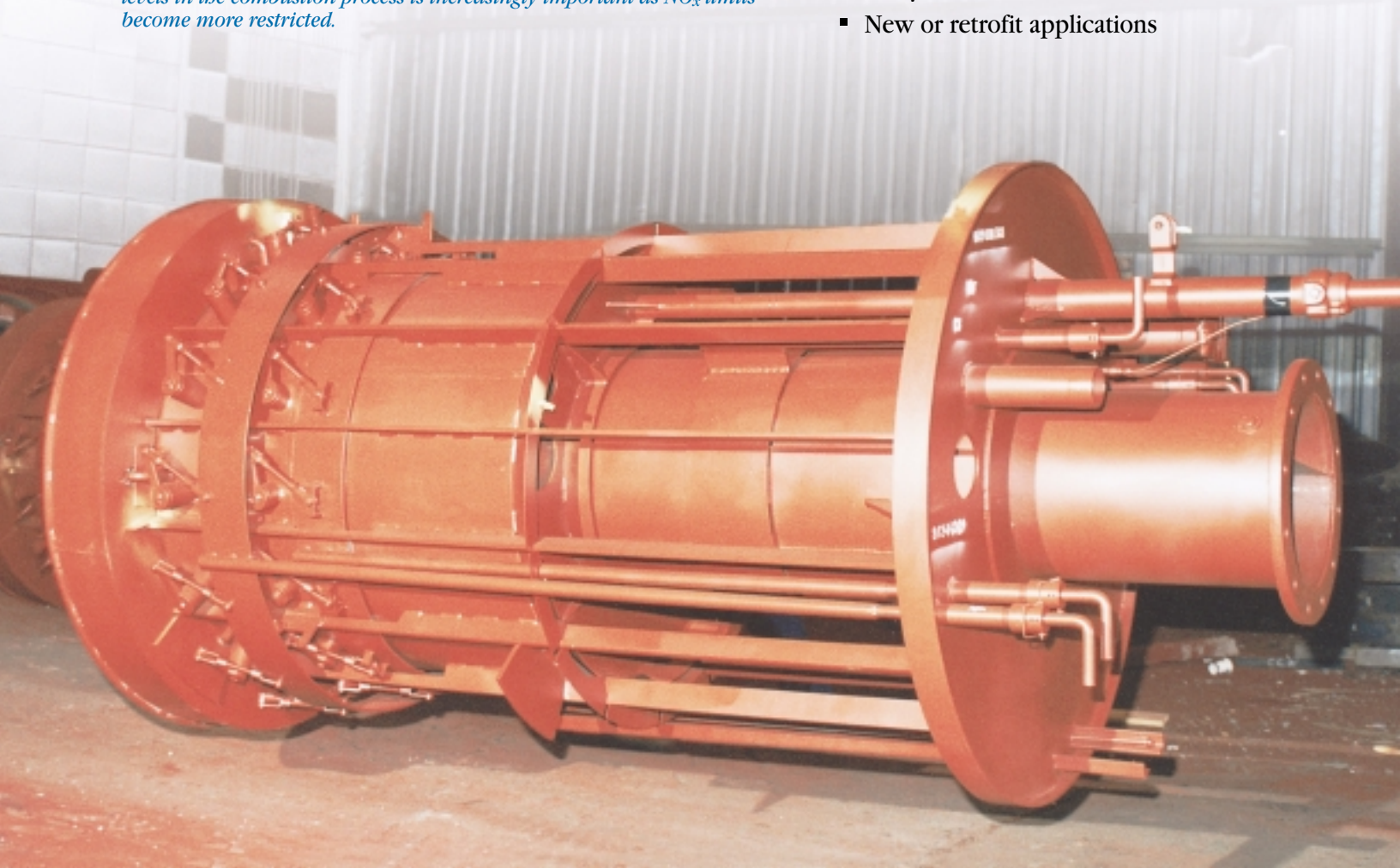
# The DRB-4Z™ Burner: Maximum NO<sub>x</sub> Reduction for Coal-Fired Applications

Babcock & Wilcox (B&W) has a long history of successfully reducing NO<sub>x</sub> emissions on coal-fired boilers. We have sold nearly 100,000 MW of low NO<sub>x</sub> combustion equipment since the early 1970s. The DRB-4Z™ burner is the most advanced coal burner yet developed by B&W. It can help utility and industrial plants achieve ever more stringent NO<sub>x</sub> reduction targets.

*The completely shop-assembled DRB-4Z burner can fire a wide range of coals, and in combination with natural gas and oil. Minimizing NO<sub>x</sub> levels in the combustion process is increasingly important as NO<sub>x</sub> limits become more restricted.*

## **B&W's DRB-4Z low NO<sub>x</sub> burner offers:**

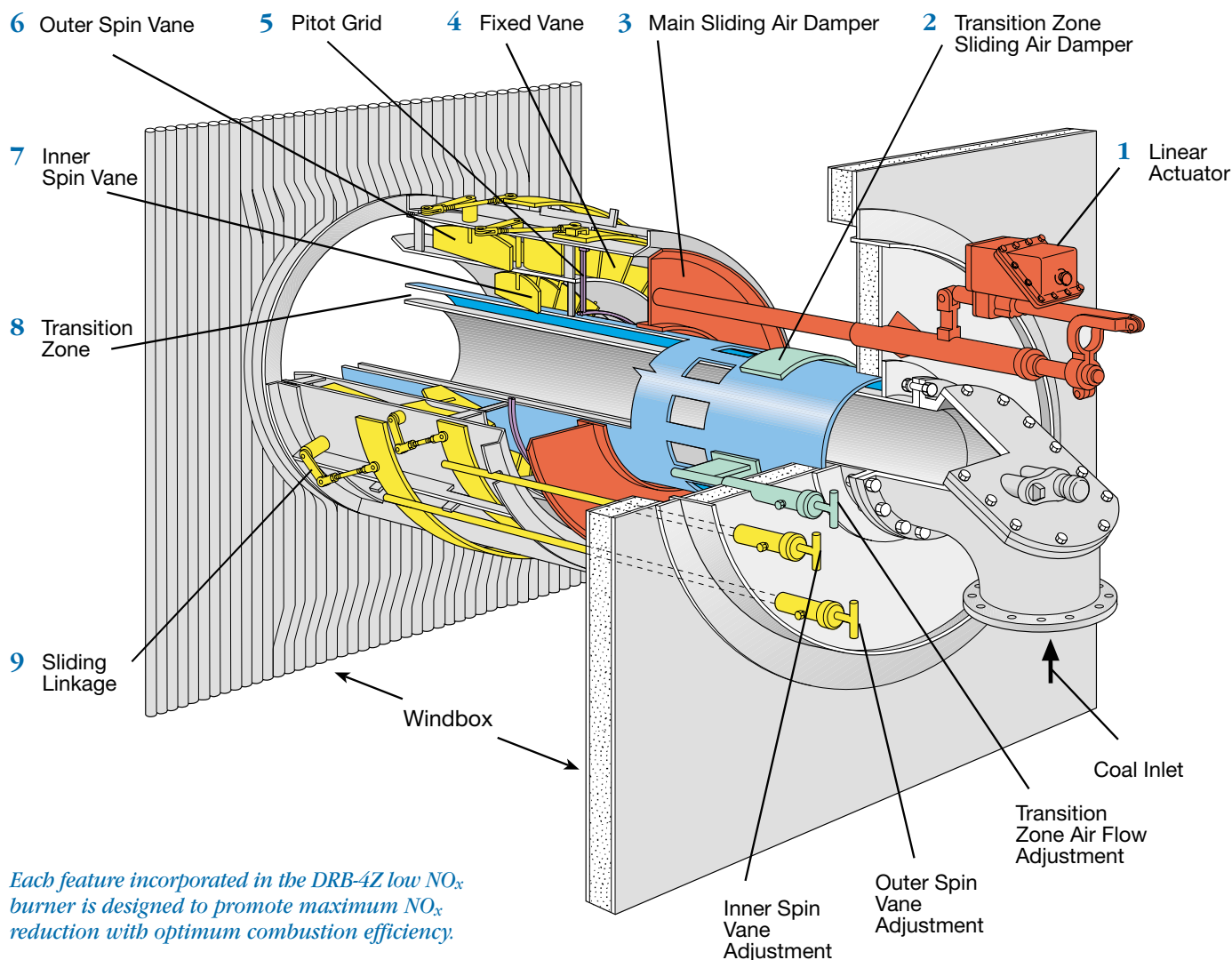
- Maximum NO<sub>x</sub> reduction for coal-fired applications
- Superior mechanical reliability and operation
- Rugged construction, integrated design
- Complete shop assembly - ready for installation
- New or retrofit applications



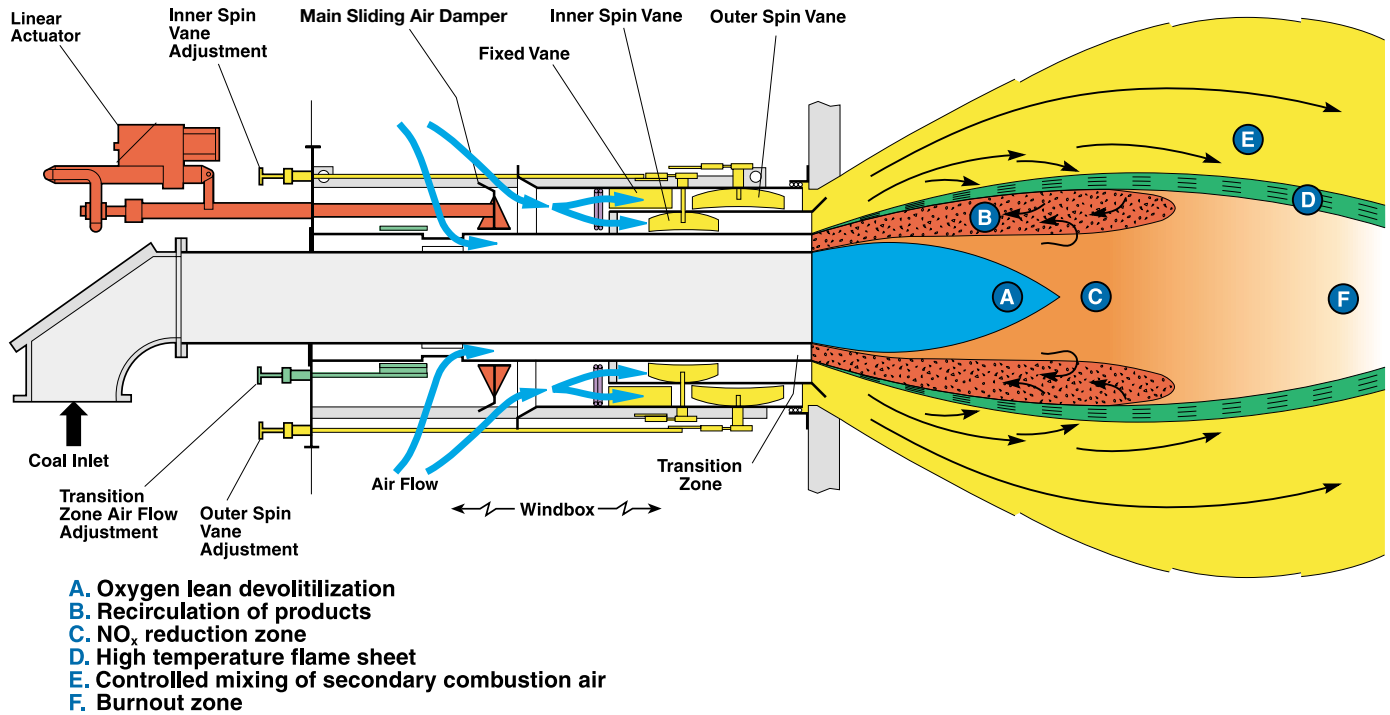
# Low NO<sub>x</sub> DRB-4Z™ Coal-Fired Burner

## Mechanical Design Features

Components	Features/Functions
1 Linear actuator	Easily adjusts the main sliding air damper position for light-off, full-load and idle/cooling
2 Transition zone sliding air damper	Regulates air to transition zone to optimize emissions
3 Main sliding air damper	Controls secondary air flow rate to the inner and outer air zones of the burner, independent of swirl
4 Fixed spin vanes for outer air zone	Improves peripheral air distribution within the burner and reduces pressure drop
5 Pitot grid	Provides a relative indication of air flow with a 30 point impact/suction device to balance air flow among burners during commissioning
6 Adjustable spin vanes for outer air zone	Provides proper mixing of the secondary air to the end of the flame
7 Adjustable spin vanes for inner air zone	Stabilizes ignition at the tip of the coal nozzle
8 Transition zone	Enhances NO <sub>x</sub> reduction by providing limited recirculation regions between primary and secondary air streams
9 Sliding linkage	Heavy-duty, non-binding, lever arm movement to control inner and outer spin vane settings — position is optimized and fixed during commissioning



# Low NO<sub>x</sub> DRB-4Z™ Coal-Fired Burner Combustion Zones



## Rugged Design Ensures Durability and Reliability



*Like all B&W combustion equipment, the parts exposed to the radiant furnace heat are constructed of high temperature alloy material (bottom of photo) ensuring long life and durability.*

## Patented Burner Design Improves NO<sub>x</sub> Reduction

The advanced DRB-4Z is designed to produce lower emissions by featuring a patented transition zone. This zone acts as a buffer between the fuel rich flame core and secondary combustion air streams. Actual emissions from applications will depend on site-specific parameters such as coal type and existing furnace and burner configuration. This design improves mixing and flame stability by limiting recirculation between air streams. These recirculation regions transport combustion products back toward the oxygen lean zone for NO<sub>x</sub> reduction.

The DRB-4Z low NO<sub>x</sub> burner was developed using proprietary computational fluid dynamic computer modeling. The prototype burner was refined through an extensive program of large-scale combustion tests performed in B&W's Clean Environment Development Facility (CEDF). The DRB-4Z burner design is solidly based upon the proven performance and experience of B&W's history with low NO<sub>x</sub> combustion equipment.

Alternate DRB-4Z burner configurations for natural gas and fuel oil firing are also available. Coupled with our leadership in advanced overfire air systems and SCR technology, B&W has the experience to meet the most stringent NO<sub>x</sub> reduction requirements.



While others may use the Babcock name, we are the **original** Babcock & Wilcox with more than 130 years of experience in engineering, constructing and servicing steam generating systems. Insist on us by name.

For more information, or a complete listing of our sales and service offices worldwide, call 1-800-BABCOCK (222-2625) in North America. Outside North America, call (330) 753-4511 or fax (330) 860-1886 (Barberton, Ohio, USA). Or access our Web site at <http://www.babcock.com>.

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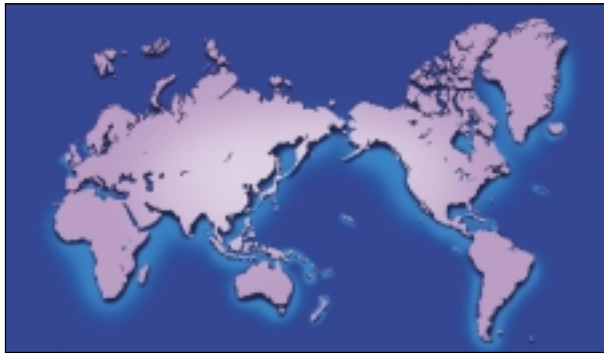
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*B&W's overfire air equipment is based upon the same rugged mechanical features as the DRB-4Z low NO<sub>x</sub> burner. Our leadership in the field of NO<sub>x</sub> reduction technology began in 1962 with the first patented overfire air port design. We have sold more than 21,000 MW of overfire air systems.*



*Through extensive research, B&W continues to develop innovative improvements in ultra low NO<sub>x</sub> combustion technology. B&W has the engineering, manufacturing and project management experience to achieve optimum combustion and post-combustion system solutions. Contact your regional B&W sales office for more information on the DRB-4Z ultra low NO<sub>x</sub> burner.*